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# **List of Acronyms**

ACEC Area of Critical Environmental Concern AGFD Arizona Game and Fish Department

AKA Also Known As

AS&G's Arizona Standards and Guidelines for Rangeland Health

AUMs Animal Unit Months

BLM Bureau of Land Management

CQFM Cerbat, Quail Springs, and Fort MacEwen Allotments

**CCC** Consultation, Cooperation and Coordination

DPC Desired Plant Community

EIS Environmental Impact Statement

EPH Ephemeral

ESD Ecological Site Description

HA Herd Area

HMA Herd Management Area HMP Habitat Management Plan

Kingman RMP Kingman Resource Area Proposed Resource Management Plan and Final

**Environmental Impact Statement** 

NRCS Natural Resource Conservation Service

% F. R. Percent Federal Range p.z. Precipitation Zone

R. I. # Range Improvement Number

RMP Kingman Resource Management Plan

TR Technical Reference

#### I. Introduction

In September 1978, BLM issued the Cerbat/Black Grazing Environmental Impact Statement (EIS, which analyzed the grazing management program on various allotments, including the Cerbat (00020), Quail Springs (00062), and Fort Mac Ewen-Unit A (00034), known as (CQFM). The goal of the Cerbat/Black Grazing EIS is to have managed grazing that will help provide quality multiple use and sustained yield management of the public land within the Kingman Resource Area.

In September 1993, BLM issued the Kingman Resource Area Proposed Resource Management Plan and Final Environmental Impact Statement (Kingman RMP). The Kingman RMP addresses grazing management on CQFM. The Kingman RMP was tiered to and specifically noted that grazing management will be guided by the Cerbat/Black Grazing EIS. In March 1995, BLM approved the Kingman RMP.

In 1996, BLM conducted a Statewide Land Use Plan Conformance Review for implementation of Arizona's Standards for Rangeland Health and Guidelines for Grazing Administration, which included the Kingman RMP. Through this review, it was determined that the Kingman RMP and decisions adopted from Cerbat/Black Grazing EIS were consistent with implementation of Standards and Guidelines for Rangeland Health.

On April 18, 1997, the State Director issued the Decision Record for the Statewide Plan Amendment of Land Use Plans in Arizona for Implementation of Arizona Standards for Rangeland Health and Guidelines for Grazing Administration.

On April 28, 1997, the Secretary of Interior approved the implementation of the Arizona Standards for Rangeland Health and Guidelines for Grazing Administration for all Land Use Plans in Arizona.

On May 20, 1999, the Arizona State Director issued the Instruction Memorandum No. AZ-99-012, titled "Plan for Implementing Arizona Standards for Rangeland Health and Guidelines for Grazing Administration".

The evaluation is being prepared in response to an application for grazing. The purpose of this evaluation is to determine if current resource conditions are meeting BLM Arizona Standards and Guidelines for Rangeland Health (AS&G's) and Kingman Resource Management Plan (RMP) objectives. The evaluation determines: 1) if standards are being met, not met, or if significant progress is being made towards meeting AS&G's and RMP Objectives 2) if existing terms and conditions remain valid and 3) if additional terms and conditions or management actions are warranted.

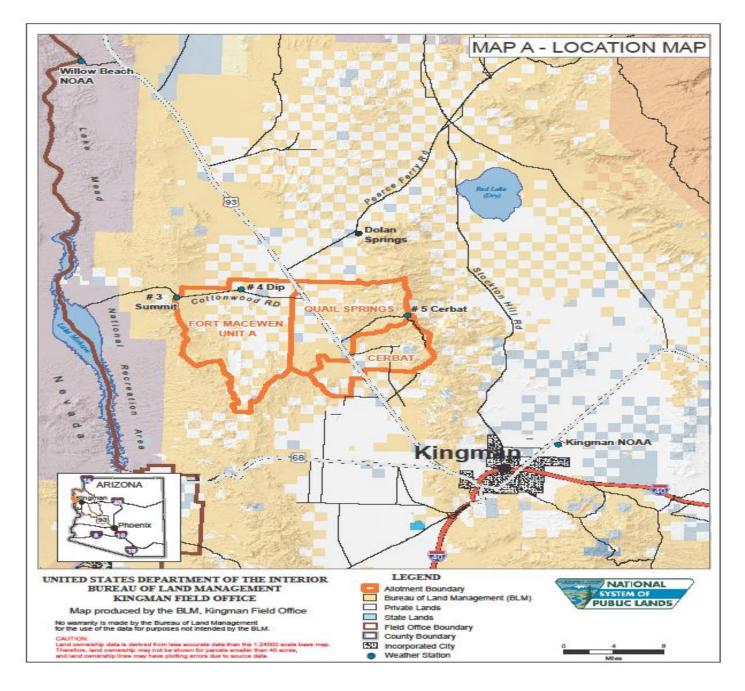
Standards are goals for the desired condition of the biological and physical components and characteristics of rangelands. Guidelines are management approaches, methods, and practices intended to achieve a standard. The evaluation will be prepared in accordance with guidance provided under the Implementation Plan for Arizona's Standards for Rangeland Health and Guidelines for Grazing Administration (AZ IM 99-012).

The evaluation was conducted by a BLM interdisciplinary team in accordance with BLM policy and procedures including the guidance noted above. In addition, it was done in cooperation, coordination, and consultation with the U.S. Fish and Wildlife Service, Arizona Game and Fish Department, the permittee and interested publics.

# II. Allotment profile

# A. Location and Setting of Allotments

CQFM is 20 miles northwest of Kingman, Arizona (Map A). These allotments cover an area of land ranging from the ridgeline and west side of the Cerbat Mountain range to the ridgeline and east side of the Black Mountain Range. These allotments include the fan terraces, drainages, and low hills in Detrital Valley that lie between the two mountain ranges.



Elevation ranges for the three allotments are 6,481 in the Cerbat Mountains to 3,012 feet along US 93 in Detrital Valley near Sacramento Wash.

The main drainage in the Cerbat Allotment is Sacramento Wash, which originates in the Cerbat Mountains and flows south into Sacramento Valley and ultimately to the Colorado River. Big Wash flows westward from the Cerbat Mountains into the uppermost reaches of Detrital Wash at the head of Detrital Valley. Detrital Wash flows north through Detrital Valley and ultimately reaches Lake Mead.

#### B. Grazing Use and Management

The rancher currently operates a cow/calf business. CQFM covers 130,138 acres with BLM managing 85,319 acres, Arizona State Land Department managing 3,877 acres, and 40,942 acres of private land. Table 1 presents the allocation of forage for livestock. In addition, 583 AUMs have been allocated to big game and wild burros and wild horses. Each of these allotments is in the "Improve" management category.

Table 1. Allotment summary of permitted use in animal unit months (AUMs).

months (AUVIS).				
Allotment	Percent Public	Active 1	Suspended 2	Total
	Land	AUMs	AUMs	AUMs
Cerbat	93	1,953	0	1,953
Quail Springs	90	2,614	0	2,614
Fort Mac Ewen (Unit	92	1,796	726	2,522
A)				
CQFM Total AUMs		6,363	726	7,090
	<ol> <li>Active use means the current authorized use. Active use may constitute a portion, or all, of permitted use. Active use does not include temporary nonuse or suspended use of forage within all or a portion of an allotment.</li> <li>Suspended means the temporary withholding from active use, through a decision issued by the authorized officer or by agreement, of part or all of the permitted use in a grazing permit or lease.</li> </ol>			

CQFM is managed as two units, one east and one west of US Highway 93 (Map B).

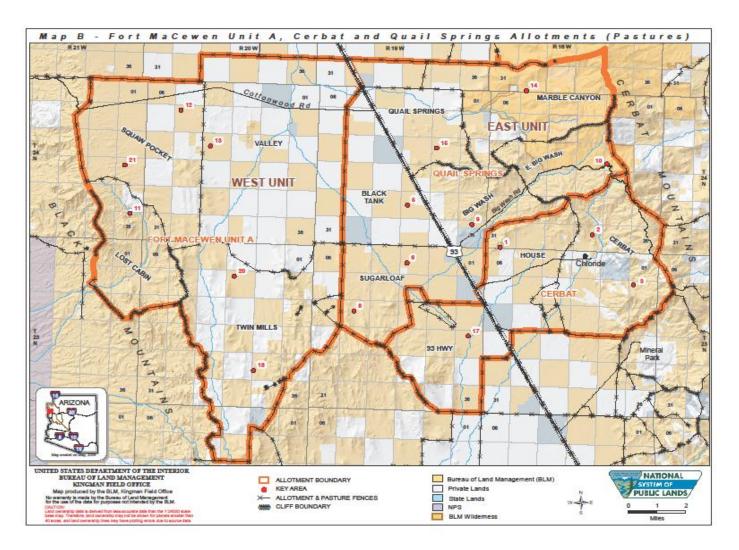
West Management Unit	East Management Unit
Fort Mac Ewen Allotment (Unit A) Pastures:	Cerbat Allotment Pastures
<ul> <li>Valley (aka. Cottonwood)</li> </ul>	• House
• Twin Mills	Cerbat
<ul> <li>Squaw Pocket</li> </ul>	Quail Springs Allotment Pastures
Lost Cabin	Big Wash
	East Big Wash
	Quail Spring
	Marble Canyon
Quail Springs Allotment Pastures	
Black Tank	
• Sugarloaf	
Cerbat Allotment Pastures	
• Highway 93	

# 1. West Unit Grazing System

Each year, beginning in mid-October cattle are put into the Squaw Pocket, Lost Cabin and Twin Mills pastures. In mid-April, cattle are gathered from these pastures and moved into the shipping corrals located in the southeast corner of the Big Ranch allotment. The cattle are separated into cattle to ship and cattle to keep. The cattle to keep are moved to the Valley, Black Tank, Sugarloaf, and Hwy 93 pastures and grazed until mid-October.

## 2. East Unit Grazing System

Each year, starting in late October, cattle are moved into the Cerbat, Marble Canyon, and East Big Wash pastures. In early May, cattle are gathered and moved into the shipping corrals located at the headquarters on the Quail Springs allotment. The cattle are separated into cattle to ship and cattle to keep. The cattle to keep are moved to the Big Wash, Quail Springs, and House Pastures until late October.



Actual use records starting in 1999 (see *Section VII*, *A*, *Data Summary*, of this evaluation) indicates the permittee has rested pastures and sometimes has rested an entire allotment. The permittee rests portions of his allotment based on rainfall and forage conditions.

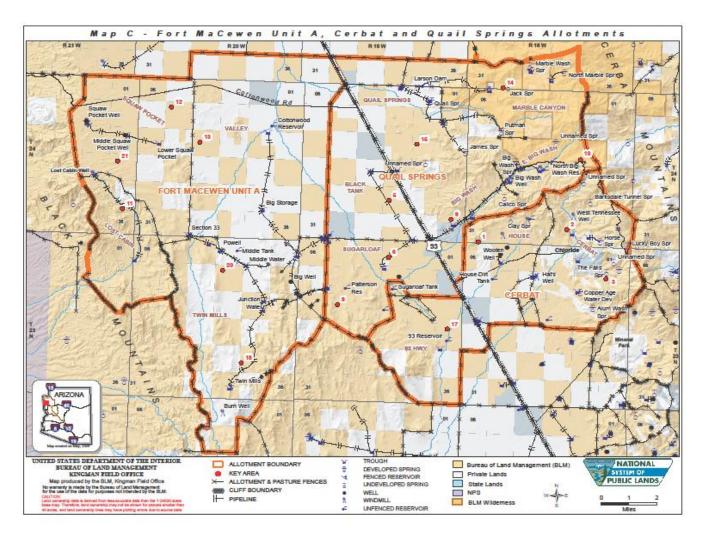
#### C. Other Resources Present on the Allotments

#### 1. Soils and Ecological Sites

The soils and ecological sites on CQFM have been mapped, correlated, and approved to National Cooperative Soil Survey Order III soil survey standards, (Soil Survey Manual, Soil Taxonomy, National Survey Handbook. This information is published in the Soil Survey of Mohave County, Arizona, Central Part 2005 by the Natural Resource Conservation Service (NRCS). More in depth soil information for these allotments can be found on the NRCS website in the soil survey report of Mohave County Arizona Central Part 2005. Corresponding Ecological Site information, correlated to soil map unit information, is also found on the NRCS website that describes ecological sites in detail. For a list of Ecological Sites that occur on CQFM see Appendix A.

# 2. Water Developments and Riparian Resources

The location of springs, wells, dirt tanks, pipelines, storages, and troughs are shown on Map C. For a list of water source names, legal location and range improvement numbers see (Appendix B). All riparian resources are associated with springs. There are no intermittent or perennial streams found on the allotments.



All watering facilities developed for livestock in both the Quail Springs and Fort Mac Ewen allotments are functional. However, in the Cerbat allotment on the east side of Highway 93 there is only one functional water facilities for livestock in the House Pasture and no functional water facilities for livestock in the Cerbat Pasture.

#### 3. Fencing (pasture fences and corrals)

The location of pasture and boundary fences can be found on Map C.

In the West Management Unit, pastures containing a large amount of private land such as the Valley and Black Tank Pastures large sections of pasture fence have been cut or removed completely. Even in pastures were the fencing has not been cut, keeping gates shut is very difficult due to the high volume of traffic. This is also true for some of the gates along boundary fences.

In the East Management Unit, pasture and boundary fencing are in better condition, however keeping gates closed can be a problem. The permittee can use water to control where his livestock graze by closing off water in corrals or by turning off waters in a pasture.

## 4. Biological Description

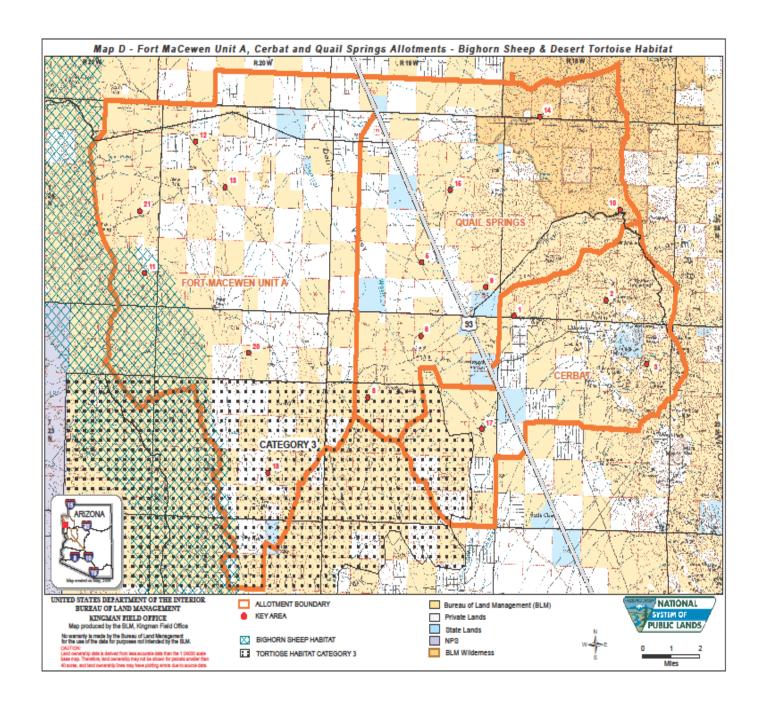
- a. Vegetation: At the lower elevations, plant communities found within these allotments often include buckhorn cholla, creosote bush, blackbrush, Joshua tree, and Mohave yucca. At the higher elevations in the Cerbat Mountains, Interior Chaparral is dominant. This plant community is characterized by shrub live oak, desert ceanothus, silk tassel, mountain mahogany, and manzanita.
- b. Wildlife: Species found on these allotments include animals typical of the Mohave Desert. These include mule deer, coyote, bobcat, mountain lion, desert cottontail, Harris ground squirrel, Merriam's kangaroo rat, cactus mouse, golden eagle, Gambel's quail, mourning dove, cactus wren, chuckwalla, and speckled rattlesnake. Habitat for the desert bighorn sheep occurs on the Fort MacEwen Allotment (Map D).

#### c. Special-Status Species

#### 1. Threatened and Endangered Species

California condor – The portions of the Cerbat and Quail Springs allotments located north of Interstate 40 and east of US Highway 93 are within the designated non-essential experimental population range of the California condor. This status applies to condors only when they are within the experimental population area. Outside of this area, condors are considered endangered.

Condors could potentially occur in the project area while foraging however they have not been documented in this area. There are no historical or known nests or roost sites within the project area. The current known locations and concentrations of condors are not within the Kingman Field Office boundaries (pers. comm. Chris Parish, Peregrine Fund, Oct. 2009).



# 2. <u>BLM Sensitive</u>; <u>Arizona State Listed Wildlife of Special Concern and Fish & Wildlife Species of Concern (FWSC)</u>

Habitat for the following special- status species occurs on these allotments:

Species	BLM Sensitive	Fish & Wildlife Species of Concern	Arizona State Listed Wildlife of Special Concern
Sonoran desert tortoise (Map D)			X

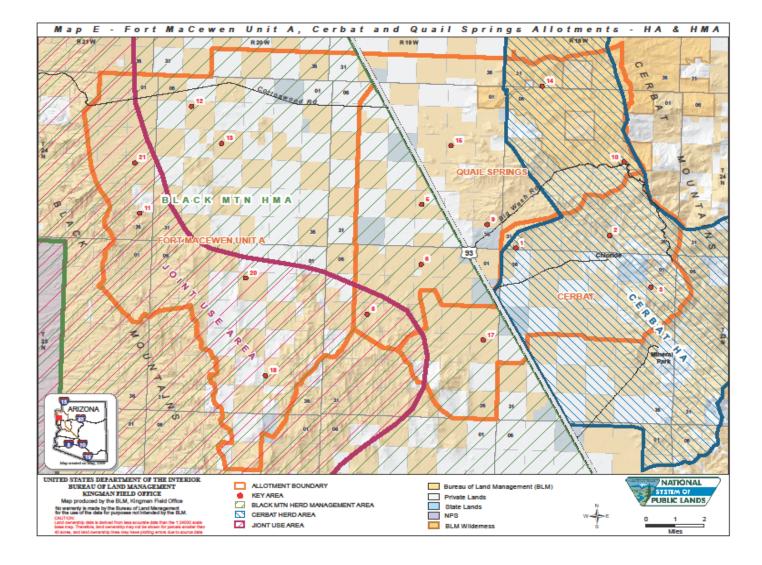
Chuckwalla	X		
Rosy boa	X		
Banded Gila		X	
monster			
Western	X		
burrowing owl			
American			X
peregrine			
falcon			
Allen's big-	X		
eared bat			
Small-footed	X		
myotis			
Long-eared	X		
myotis			
Fringed myotis	X		
Cave myotis	X		
Big free-tailed	X		
bat			
Pocketed free-	X		
tailed bat			
Arizona myotis	X		
Spotted bat			X
Townsend's		X	
big-eared bat			
California leaf-			X
nosed bat			
Cerbat beard-	X		
tongue			

#### 5. Wild Horses and Burros

Portions of these allotments lie within the boundaries of both the Cerbat Herd Area (HA) and the Black Mountain Herd Management Area (HMA) (Map E).

The Cerbat HA includes most of the Cerbat mountain range and has supported as many as 90 wild horses. Part of the Cerbat HA encompasses the Cerbat allotment and portions of the Quail Springs allotment east of Highway 93 (Map E).

The Black Mountain HMA includes the entire range of the Black Mountains and is managed to maintain a herd of 478 wild burros. Portions of the Cerbat, Quail Springs and Fort Mac Ewen allotments west of Highway 93 lie within the HMA (Map E).



#### 6. Wilderness

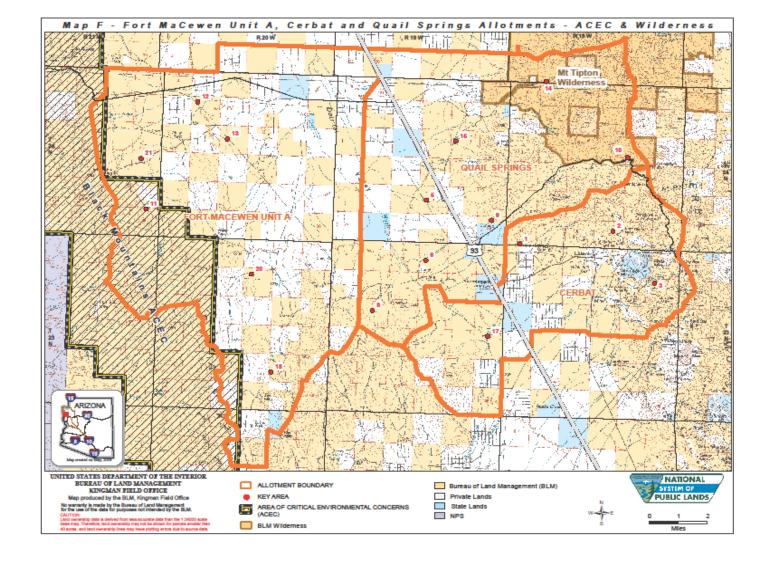
Approximately 8,180 acres of the Mount Tipton Wilderness, designated by Congress in November, 1990, is located in the eastern portion of the Quail Springs Allotment (Map F). This area was selected for its high degree of naturalness.

#### 7. Area of Critical Environmental Concern (ACEC)

Part of the Black Mountains Ecosystem Management Area of Critical Environmental Concern occurs within the Fort Mac Ewen Unit A Allotment (Map F). The ACEC was established to protect the diverse resources within its boundaries by balancing uses.

#### 8. Recreational Use

Two developed campgrounds (Windy Point and Packsaddle), and Cherum Peak Trail are within the allotments. The remainder of the area in the allotments, excluding wilderness, is open to dispersed recreation uses and to OHV use on existing roads, trails and navigable washes.



#### 9. Cultural Resources

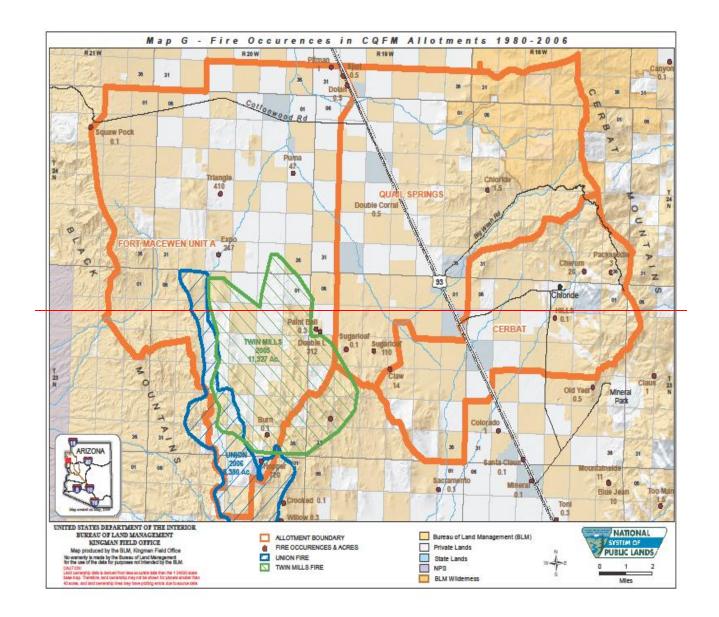
There are numerous cultural sites scattered across this allotment consisting of:

- 1. Prehistoric artifact scatters of ceramic and stone tool debitage.
- 2. Historic sites related to mining.
- 3. Remnants of historic Hualapai Indian home sites.

There are 12 sites formally documented in this allotment. The home sites no longer have standing architecture so cattle do not impact them. The mining sites have sparse vegetation, no standing water therefore, cattle do not congregate in these areas.

#### 10. Fire Management

The vegetation within the Fort MacEwen allotment, Twin Mills and Valley Pastures were burned by wildfire in July, 2005 (Twin Mills Fire, 11,927 acres) and in June, 2006 (Union Fire, 8,380 acres) (Map G). In the 1980s and 1990s, other fires occurred in the Fort MacEwen and Quail Springs allotments however they were smaller in scale (Map G).



# III. Management Goals and Objectives

The following Standards are excerpts' from Arizona Standards for Rangeland Health and Guidelines for Grazing Administration (BLM, 1997):

## A. Standard 1: Upland Health Sites

Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and landform (ecological site).

#### Criteria for meeting Standard 1:

• Soil conditions support proper functioning of hydrologic, energy, and nutrient cycles. Many factors interact to maintain stable soils and healthy soil conditions, including appropriate amounts of vegetative cover, litter, and soil porosity and organic matter.

Under proper functioning conditions, rates of soil loss and water infiltration are consistent with the potential of the site.

- Ground cover in the form of plants, litter or rock is present in pattern, kind, and amount sufficient to prevent accelerated erosion for the ecological site; or ground cover is increasing as determined by monitoring over an established period of time.
- Signs of accelerated erosion are minimal or diminishing for the ecological site as determined by monitoring over an established period of time.

As indicated by such factors as:

- Ground Cover
  - litter
  - live vegetation, amount and type (e.g., grass, shrubs, trees, etc.)
  - rock
- Signs of erosion
  - flow pattern
  - gullies
  - rills
  - plant pedestaling

Exceptions and exemptions (where applicable): none

#### Guidelines:

- 1-1 Management activities will maintain or promote ground cover that will provide for infiltration, permeability, soil moisture storage, and soil stability appropriate for the ecological sites within management units. The ground cover should maintain soil organisms and plants and animals to support the hydrologic and nutrient cycles, and energy flow. Ground cover and signs of erosion are surrogate measures for hydrologic and nutrient cycles and energy flow.
- 1-2 When grazing practices alone are not likely to restore areas of low infiltration or permeability, land management treatments may be designed and implemented to attain improvement.

## B. Standard 2: Riparian-Wetland Sites

Riparian-wetland areas are in properly functioning condition.

#### Criteria for meeting Standard 2:

Stream channel morphology and functions are appropriate for proper functioning condition for existing climate, landform, and channel reach characteristics. Riparian-wetland areas are functioning properly when adequate vegetation, land form, or large woody debris is present to dissipate stream energy associated with high water flows.

Riparian-wetland functioning condition assessments are based on examination of hydrologic, vegetative, soil and erosion-deposition factors. BLM has developed a standard checklist to address these factors and make functional assessments. Riparian-wetland areas are functioning properly as indicated by the results of the application of the appropriate checklist.

The checklist for riparian areas is in Technical Reference 1737-9 "Process for Assessing Proper Functioning Condition" (BLM 1993 and 1998). The checklist for wetlands is in Technical Reference 1737-11 "Process for Assessing Proper Functioning Condition for Lentic Riparian-Wetland Areas" (BLM 1998a and 1999).

As indicated by such factors as:

- Gradient
- Width/depth ratio
- Channel roughness and sinuosity of stream channel
- Bank stabilization
- Reduced erosion
- Captured sediment
- Ground-water recharge
- Dissipation of energy by vegetation

Exceptions and exemptions (where applicable):

- Dirt tanks, wells, and other water facilities constructed or placed at a location for the purpose of providing water for livestock and/or wildlife and which have not been determined through local planning efforts to provide for riparian or wetland habitat are exempt.
- Water impoundments permitted for construction, mining, or other similar activities are exempt.

#### **Guidelines:**

- 2-1. Management practices maintain or promote sufficient vegetation to maintain, improve or restore riparian-wetland functions of energy dissipation, sediment capture, groundwater recharge and stream bank stability, thus promoting stream channel morphology (e.g., gradient, width/depth ratio, channel roughness and sinuosity) and functions appropriate to climate and landform.
- 2-2. New facilities are located away from riparian-wetland areas if they conflict with achieving or maintaining riparian-wetland function. Existing facilities are used in a way that does not conflict with riparian-wetland functions or are relocated or modified when incompatible with riparian-wetland functions.
- 2-3. The development of springs and seeps or other projects affecting water and associated resources shall be designed to protect ecological functions and processes.

#### C. Standard 3: Desired Resource Conditions

Productive and diverse upland and riparian-wetland plant communities of native species exist and are maintained.

#### Criteria for meeting Standard 3:

Upland and riparian-wetland plant communities meet desired plant community objectives. Plant community objectives are determined with consideration for all multiple uses. Objectives also address native species, and the requirements of the Taylor Grazing Act, Federal Land Policy and Management Act, Endangered Species Act, Clean Water Act, and appropriate laws, regulations, and policies.

Desired plant community objectives will be developed to assure that soil conditions and ecosystem function described in Standards 1 and 2 are met. They detail a site-specific plant community, which when obtained, will assure rangeland health, State water quality standards, and habitat for endangered, threatened, and sensitive species. Thus, desired plant community objectives will be used as an indicator of ecosystem function and rangeland health.

As indicated by such factors as:

- Composition
- Structure
- Distribution

Exceptions and exemptions (where applicable):

• Ecological sites or stream reaches on which a change in existing vegetation is physically, biologically, or economically impractical.

#### Guidelines:

- 3-1. The use and perpetuation of native species will be emphasized. However, when restoring or rehabilitating disturbed or degraded rangelands, non-intrusive, non-native plant species are appropriate for use where native species (a) are not available, (b) are not economically feasible, (c) cannot achieve ecological objectives as well as non-native species, and/or (d) cannot compete with already established non-native species.
- 3-2. Conservation of Federal threatened or endangered, proposed, candidate, and other special status species is promoted by the maintenance or restoration of their habitats.
- 3-3. Management practices maintain, restore, or enhance water quality in conformance with State or Federal standards.
- 3-4. Intensity, season and frequency of use, and distribution of grazing use should provide for growth and reproduction of those plant species needed to reach desired plant community objectives.
- 3-5. Grazing on designated ephemeral (annual and perennial) rangeland may be authorized if the following conditions are met:

- ephemeral vegetation is present in draws, washes, and under shrubs and has grown to useable levels at the time grazing begins;
- sufficient surface and subsurface soil moisture exists for continued plant growth;
- serviceable waters are capable of providing for proper grazing distribution;
- sufficient annual vegetation will remain on site to satisfy other resource concerns, (i.e., watershed, wildlife, wild horses and burros); and
- monitoring is conducted during grazing to determine if objectives are being met.
- 3-6. Management practices will target those populations of noxious weeds which can be controlled or eliminated by approved methods.
- 3-7. Management practices to achieve desired plant communities will consider protection and conservation of known cultural resources, including historical sites, and prehistoric sites and plants of significance to Native American peoples.

# Site Specific Objectives by Key Areas

The desired resource conditions are site-specific and defined as desired plant community (DPC) objectives. Vegetation attributes for composition, and cover were used to describe site specific plant community objectives. Attainment of the site specific objectives would ensure that Standard 3 is met. The key area DPC objectives are based on the site potential described in the ecological site guides developed by the NRCS, measured field observations, and professional judgment.

## Maintain plant communities as listed below:

**Cerbat Allotment -** Key area # 1

Ecological Site - Sandy Loam Upland 10-13" p.z.

Maintain total live perennial vegetative cover: 20% to 30%

Key Species	Composition Objective
Big galleta	
Black grama	26-47%
Bush muhly	
3-Awn	
Flat-top buckwheat	
Mormon tea	3 to 12%
Range ratany	
Bladdersage	

#### Cerbat Allotment - Key area # 2

Ecological Site - Granitic Hills 10-13" p.z.

Maintain total live perennial vegetative cover: 25% to 35%

Key Species	Composition Objective
Big galleta	
Black grama	17 to 33%
Desert needle	
3-Awn	
Flat-top buckwheat	
Mormon tea	31-45%
Range ratany	
Bladdersage	

# **Cerbat Allotment -** Key area # 3

Ecological Site - Granitic Hills 10-13" p.z.

Maintain total live perennial vegetative cover: 25% to 35%

Key Species	Composition Objective
Black grama	
Desert needle	17 to 33%
3-Awn	
Flat-top buckwheat	
Buck brush	31 to 45%

#### **Cerbat Allotment -** Key area # 17

Ecological Site - Clay Loam Upland 10-13" p.z.

Maintain total live perennial vegetative cover: 10% to 20%

Key Species	Composition Objective
Big galleta	
Black grama	22 to 38%
Bush muhly	
Flat-top buckwheat	
Mormon tea	11 to 23%
Range ratany	

## **Quail Spring Allotment -** Key area # 5

Ecological Site - Clay Loam Upland 10-13" p.z.

Maintain total live perennial vegetative cover: 10% to 20%

KeySpecies	Composition Objective
Big galleta	
Black grama	22 to 38%
Bush muhly	
Wolfberry	
Mormon tea	1 to 12%
Winter fat	
White-stem paperflower	

#### **Quail Spring Allotment -** Key area # 6

Ecological Site - Clay Loam Upland 10-13" p.z.

Maintain total live perennial vegetative cover: 10% to 20%

Key Species	Composition Objective
Big galleta	
Black grama	21 to 35%
Bush muhly	
Wolfberry	
Mormon tea	2 to 6%
Winter fat	
White-stem paperflower	

# Quail Spring Allotment - Key area #8

(within Joint Use Area)

**Ecological Site** - Basalt Hills 10-13" p.z.

Maintain total live perennial vegetative cover: 10% to 20%

Key Species	Composition Objective
Big galleta	
Desert needle	9-24%
3-Awn	
Flat-top buckwheat	
Mormon tea	
Range ratany	17 to 43%
Bladdersage	
Wolfberry	

# **Quail Springs Allotment -** Key area # 9

Ecological Site - Sandy Loam Upland 10-13" p.z.

Maintain total live perennial vegetative cover: 20% to 30%

Key Species	Composition Objective
Big galleta	
Black grama	20 to 35%
Flat-top buckwheat	
Mormon tea	3 to 12%
Range ratany	
Bladdersage	

# **Quail Springs Allotment -** Key area # 10

**Ecological Site** - Granitic Hills 10-13" p.z.

Maintain total live perennial vegetative cover: 25% to 35%

Key Species	Composition Objective
Black grama	
Sideoats grama	
Desert needle	17 to 38%
3-Awn	
Bush muhly	
Flat-top buckwheat	
Menodora	30 to 45%
Buck brush	

## Quail Springs Allotment - Key area # 14

Ecological Site - Granitic Hills 10-13" p.z.

Maintain total live perennial vegetative cover: 20% to 40%

Key Species	Composition Objective
Desert needle	
Sideoats grama	16 to 33%
Desert needle	
Black grama	
3-Awn	
Flat-top buckwheat	
Shrubby buckwheat	
Mormon tea	31 to 45%
Range ratany	
Bladdersage	

# **Quail Springs Allotment -** Key area # 15

Ecological Site - Sandy Loam Upland 10-13" p.z.

Maintain total live perennial vegetative cover: 20% to 40%

Key Species	Composition Objective
Big galleta	
Black grama	20 to 35%
Flat-top buckwheat	
Mormon tea	2 to 9%
Range ratany	

# Fort Mac Ewen Unit A Allotment - Key area # 11 (within Joint Use Area)

Ecological Site - Basalt Hills "6-10" p.z.

Maintain total live perennial vegetative cover: 20% to 30%

Key Species	Composition Objective
Big galleta	
Bush muhly	1 to 8%
3-Awn	
Flat-top buckwheat	
White ratany	3 to 15%
Range ratany	

# Fort Mac Ewen Unit A Allotment - Key area # 12

# Ecological Site - Sandy Loam Upland 10-13" p.z.

Maintain total live perennial vegetative cover: 10% to 20%

Key Species	Composition Objective
Big galleta	1 to 5%
Flat-top buckwheat	
Mormon tea	3 to 15%
Range ratany	

Fort Mac Ewen Unit A Allotment - Key area # 13

Ecological Site - Sandy Loam Upland 10-13" p.z.

Maintain total live perennial vegetative cover: 10% to 20%

Key Species	Composition Objective
Big galleta	1 to 5%
Flat-top buckwheat	
Mormon tea	2 to10%
Range ratany	

Fort Mac Ewen Unit A Allotment - Key area # 18 (within Joint Use Area)

Ecological Site - Basalt Hills 10-13" p.z.

Maintain total live perennial vegetative cover: 10% to 20%

Key Species	Composition Objective
Muttongrass	2 to 10%
Big galleta	
3-Awn	
Shrubby buckwheat	
Flat-top buckwheat	
Mormon tea	17 to 35%
Range ratany	
Bladdersage	

**Fort Mac Ewen Unit A Allotment -** Key area # 20 (within Joint Use Area)

**Ecological Site** - Limy Hills 10-13" p.z.

Maintain total live perennial vegetative cover: 15% to 20%

Key Species	Composition Objective
Big galleta	10 to 15%
3-Awn	
Mormon tea	6 to 15%
Range ratany	

Fort Mac Ewen Unit A Allotment - Key area # 21(aka. Lost Cabin Spring) (Squaw Pocket Pasture) (within Joint Use Area)

Ecological Site - Sandy Loam Upland 10-13" p.z.

Maintain total live perennial vegetative cover: 10% to 20%

Key Species	Composition Objective
Bush muhly	2 to 10%
Big galleta	
Mormon tea	2 to 10%
Wolfberry	

#### D. Other Plan Objectives

The Kingman Resource Management Plan (BLM 1995), Cerbat/Black Mountains Grazing EIS (BLM 1978), Black Mountain Ecosystem Management Plan (BLM 1996), Cerbat-Music

Mountains Habitat Management Plan (BLM 1983) and the Mount Tipton Wilderness Management Plan (BLM 1995a) were reviewed to determine goals and objectives that apply to this evaluation. The goals and objectives would be met if Standards for rangeland health are met.

Utilization Objectives: The utilization objectives are clarified below:

- 1. Cerbat/Black Mountains Grazing EIS (BLM 1978), the following has been paraphrased: Permit livestock grazing at 50% utilization level of key species (BLM 1978, pg. VII-20 and BLM 1979). This objective is clarified to read "Manage for moderate use (40 to 60%) of current year's growth on key warm and cool season grasses over the evaluation period. If utilization consistently exceeds 50% use over a period of 2 years, apply management changes as necessary before undesirable long-term trend is identified by monitoring".
- 2. Black Mountain Ecosystem Management Plan (BLM 1996) states "Once the plan is approved limit utilization on key species (Table 4) within key areas (areas between 0.25 0.75 miles of permanent water sources) in the Black Mountain ecosystem over the life of the plan". This objective is clarified "Within key areas\*, manage for average use levels, of current year's growth, for key species listed in Table 4 (BLM 1996) If utilization consistently exceeds listed levels over a period of 2 years, apply management changes as necessary before undesirable long-term trend is identified by monitoring.

Below is Table 4 from the Black Mountain Ecosystem Plan

# <u>Utilization Limits (Proper Use Factors for Key Plant Species)</u>

White bursage (Ambrosia dumosa)	20%
Flattop buckwheat ( <i>Eriogonum fasciculatum</i> )	15%
Big galleta (Hilaria rigida)	35%
Mormon tea (Ephedra nevadensis)	40%
Globe mallow (Sphaeralcea ambigua)	40%
Desert rock-pea (Lotus rigida)	30%
Chuckwalla's delight (Bebbia juncia)	15%
Shrubby buckwheat ( <i>Eriogonum wrightii</i> )	40%

This objective applies to Key Areas 8, 11, 18, 20 and 21, located within the joint use area and will be used as one of the criteria for determining if Standard 3 is met.

Cerbat-Music Mountains Habitat Management Plan (HMP) Objectives:

1. Waters on public land should be made available to wildlife year long, even when not in use by livestock (Cerbat-Music Mountains HMP, pg. 33). This objective is being implemented (pers. comm. to M. Blanton from W. Hamilton, 2009).

Mount Tipton Wilderness Management Plan Objectives:

1. Conduct inspection and routine maintenance of range improvements (fences, spring developments etc.), located within the wilderness area, using non-motorized and non-mechanized means. This objective is being implemented.

## IV. Monitoring Methods

## 1. Upland Health

Range health assessment is a qualitative assessment of the soil-related indicators such as rills, flow patterns, pedestals, bare ground, gullies, litter movement, soil compaction etc.(Interpreting Indicators of Rangeland Health TR 1734-6). The 17 indicators of rangeland health are used to determine if Standard 1 for rangeland health is being met, not met, or significant progress is being made towards meeting the standards. Those attributes are measured at \*key area(s) located on the major soil types within the allotment.

\*Key Areas - Key Areas are indicator areas that are able to reflect what is happening on a larger area as a result of on-the-ground management actions. A key area should be a representative sample of a large stratum, such as a pasture, grazing allotment, wildlife habitat area, herd management area, watershed area, etc., depending on the management objectives being addressed by the study. Key areas represent the "pulse" of the rangeland. Proper selection of key areas requires appropriate stratification. Statistical inference can only be applied to the stratification unit (Sampling Vegetation Attributes, Interagency Technical Reference, 1996, pg 3, TR1730-002).

#### 2. Riparian Assessment

There are no lotic (flowing) riparian wetland areas within CQFM.

There are springs (lentic) that have riparian values located within CQFM. An inter-disciplinary team accessed functionality of the springs on public lands, using the method found in TR-1737-16 (BLM 1999, Revised 2003). Springs identified for inventory were those that had a range improvement permit, and/or springs thought or known to be perennial, and/or springs of unknown water status (perennial or ephemeral). Springs known to be ephemeral were not inventoried.

## 3. Desired Resource Conditions

The desired resource conditions are site-specific and defined as desired plant community (DPC) objectives. Vegetation attributes for composition, and cover were used to describe site specific plant community objectives. Attainment of the site specific objectives would ensure that Standard 3 is met. The key area DPC objectives are based on the site potential described in the ecological site guides developed by the NRCS, the potential for the site to change, measured field observations, and professional judgment. The following data is used to assess whether Standard 3 is being met:

<u>Cover</u> - data was collected using the Pace-frequency method at key areas. Sampling techniques are described in Sampling Vegetation Attributes, Interagency Technical Reference, 1996, pg 40 (TR1730-002).

<u>Frequency</u> - data was collected using the Pace-frequency method at key areas. Sampling techniques are described in Sampling Vegetation Attributes, Interagency Technical Reference, 1996, pg 37 (TR1730-002).

<u>Dry Weight Rank</u> - plant composition data was collected using the Dry Weight Rank method at key areas. Sampling techniques for Dry Weight Rank are described in Sampling Vegetation Attributes, Interagency Technical Reference, 1996, pg 50 (TR1730-002).

<u>Utilization</u> – utilization data was collected at upland transects within the key areas using the Grazed Class and Browse Utilization Class Method, as described in, Utilization Studies and Residual Measurements, Interagency Technical Reference, 1996 pg 109, 83 (TR1730-004).

# V. Data Summary

Monitoring data collected during the evaluation period of 1983-2008 has been summarized for comparison with objectives.

#### A. Actual/Licensed Use

All AUMs shown before 2001 are based upon Licensed Use. Actual Use reporting did not start until 2001 and actual use was reported by allotment not by pasture. AUMs for all three allotments are listed below:

Year	Cerbat AUMs	Quail Spring AUMs	Fort Mac Ewen AUMs
1981	1953	2613	2052 (+Eph)
1982	1953	3071 (+Eph)	1916 (+Eph)
1983	1953	2556 (% F. R. change)	3059 (+Eph)
1984	2235 (+Eph)	2952 (+Eph)	2149 (+Eph)
1985	1953	2556	1772
1986	1953	2556	1772
1987	1953	2556	1772
1988	1003	1272	1906 (+Eph)
1989	1072	1452	1308
1990	354	403	1412
1991	821	566	1689
1992	592	431	1795
1993	592	431	1795
1994	1115	543	1795
1995	1115	540	1795
1996	1009	698	1705 (% F.R. change)
1997	1953	2614	1556
1998	1953	2397	1062
1999	518	1757	1839 (+Eph)
2000	1150	632	2757 (+Eph)
2001	679	367	335
2002	132	0	0
2003	371	522	477
2004	211	340	598
2005	335	162	915
2006	391	297	659
2007	391	1782	2651 (+Eph)
2008	502	1836	1360

<sup>\* (%</sup> F.R. change) Means the percentage of federal land changed that year.

<sup>\*(+</sup>Eph) Means additional cattle were turned out based upon additional ephemeral forage.

#### B. Weather Data

This allotment is influenced by both winter Pacific frontal storms and summer orographic convective storms. Approximately 65% of the annual precipitation falls during the cooler months of October through April with approximately 35% of the annual precipitation falling during the months of May through September. This bi-modal rainfall pattern results in two distinct growing seasons which occur in the spring and summer.

Rainfall trends were evaluated using NOAA rainfall data collected from the Kingman and Willow Beach Stations in the years 1981- 1991 (Appendix C). From 1992-2008 more site specific rainfall data collected on the CQFM allotments were used (Appendix C). Rainfall data broken into three categories cool season (March-June), warm season (July-October) and total annual. Yearly totals in the cool and warm season category were compared the average rainfall in each of these category. This comparison shows above and below average seasonal rainfall. Less than 75 percent of the seasonal average rainfall was considered drought for a give season. Any season determined to be a drought is shaded gray in Appendix C.

From 1992 through 2008 warm season drought occurred in eleven out of seventeen years and cool season drought occurred in nine out of seventeen years. Warm-season drought condition occurred several years in a row starting in 1993-1996, 2001-2003, and 2007-2008. In the 1980s, seasonal droughts also occurred but less frequent four out of eleven years. The duration of drought was shorter as well usually only one or two years in a row.

# C. Vegetation Data - Cover and Plant Composition

The East Management Unit contains Key Areas 1, 2, 3, 9, 10, 14 and 15 and the West Management Unit contains Key Areas 5, 6, 8, 11, 12, 13, 17, 18, 20, and 21 (Map B).

Cover data has been collected intermittently over a span of 28 years. Plant composition data has been collected intermittently since 2000. The following summarizes cover and composition for each key area. For more detailed information see Appendix D and G.

# **Cerbat Allotment -** Key area # 1 (House Pasture)

Ecological Site - Sandy Loam Upland 10-13" p.z. Current total live perennial vegetative cover: 22%

Current plant composition:		Total for grasses or shrubs	Composition Objective
Big galleta	34%		
Black grama	13%	53%	26-47%
Bush muhly	1%		
3-Awn	5%		
Flattop buckwheat	12%		
Mormon tea	11%	32%	3-12%
Range ratany	8%		
Bladdersage	1%		

# **Cerbat Allotment -** Key area # 2 (Cerbat Pasture)

Ecological Site - Granitic Hills 10-13" p.z.

Current total live perennial vegetative cover: 32%

Current plant composition:		Total for grasses or shrubs	Composition Objective
Big galleta	5%		
Black grama	1%	22%	17-33%
Desert needle	13%		
3-Awn	3%		
Flattop buckwheat	25%		
Mormon tea	3%	37%	31-45%
Range ratany	4%		
Bladdersage	5%		

# **Cerbat Allotment -** Key area # 3 (Cerbat Pasture)

Ecological Site - Granitic Hills 10-13" p.z.

Current total live perennial vegetative cover: 39%

Current plant composition:		Total for grasses or shrubs	Composition Objective
Black grama	2%		
Desert needle	10%	13%	17-33%
3-Awn	1%		
Flattop buckwheat	52%	53%	31-45%
Buck brush	1%		

# **Cerbat Allotment -** Key area # 17 (Highway 93 Pasture)

Ecological Site - Clay Loam Upland 10-13" p.z.

Current total live perennial vegetative cover: 11%

Current plant compos	sition:	Total for grasses or shrubs	Composition Objective
Big galleta	43%		
Black grama	3%	47%	22-38%
Bush muhly	1%		
Flattop buckwheat	12%		
Mormon tea	8%	26%	11-23%
Range ratany	6%		

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# **Quail Spring Allotment -** Key area # 5 (Black Tank Pasture)

Ecological Site - Clay Loam Upland 10-13" p.z. Current total live perennial vegetative cover: 13%

Current plant composition:		Total for grasses or shrubs	Composition Objective
Big galleta	43%		
Black grama	0.4%	44%	22-38%
Bush muhly	0.4%		
Wolfberry	4%		
Mormon tea	11%	17%	1-12%
Winterfat	1%		
White-stem paperflower			
	1%		

# **Quail Spring Allotment -** Key area # 6 (Sugar Loaf Pasture)

**Ecological Site** - Clay Loam Upland 10-13" p.z.

Current total live perennial vegetative cover: 15%

Current plant comp	oosition:	Total for grasses or shrubs	Composition Objective
Big galleta	59%	60%	21-35%
Black grama	1%		
Mormon tea	4%	4%	0-3%

# **Quail Spring Allotment -** Key area # 8 (Sugar Loaf Pasture)

(within Joint Use Area)

**Ecological Site** - Basalt Hills 10-13" p.z.

Current total live perennial vegetative cover: 27%

Current plant composition:		Total for grasses or shrubs	Composition Objective
Big galleta	53%		
Desert needlegrass	1%	57%	9-24%
3-Awn	3%		
Flattop buckwheat	3%		
Mormon tea	3%		
Range ratany	1%	16%	17-43%
Bladdersage	7%		
Wolfberry	2%		

# **Quail Springs Allotment -** Key area # 9 (West Big Wash Pasture)

Ecological Site - Sandy Loam Upland 10-13" p.z.

Current total live perennial vegetative cover: 20%

Current plant composition:		Total for grasses or shrubs	Composition Objective
Big galleta	39%	41%	20-35%
Black grama	2%		
Flattop buckwheat	7%		
Mormon tea	8%	29%	3-12%
Range ratany	9%		
Bladdersage	5%		

# **Quail Springs Allotment -** Key area # 10 (East Big Wash Pasture)

Ecological Site - Granitic Hills 10-13" p.z.

Current total live perennial vegetative cover: 49%

Current plant composition:		Total for grasses or shrubs	Composition Objective
Black grama	1%		
Sideoats grama	7%		
Desert needlegrass	5%	21%	17-38%
3-Awn	7%		
Bush muhly	1%		
Flattop buckwheat	1%		
Menodora	1%	20%	30-45%
Buck brush	18%		

# **Quail Springs Allotment -** Key area # 14 (Marble Canyon Pasture)

Ecological Site - Granitic Hills 10-13" p.z.

Current total live perennial vegetative cover: 44%

Current plant composition:		Total for grasses or shrubs	Composition Objective
Desert needlegrass	6%		
Sideoats grama	5%	20%	16-33%
Black grama	7%		
3-Awn	2%		
Flattop buckwheat	6%		
Shrubby buckwheat	2%	15%	36-60%
Mormon tea	1%		
Range ratany	1%		
Bladdersage	5%		

# **Quail Springs Allotment -** Key area # 15 (Quail Springs Pasture)

Ecological Site - Sandy Loam Upland 10-13" p.z.

Current total live perennial vegetative cover: 29%

Current plant composition:		Total for grasses or shrubs	Composition Objective
Big galleta	33%	40%	20-35%
Black grama	7%		
Flattop buckwheat	7%		
Mormon tea	13%	36%	2-9%
Range ratany	16%		

Fort Mac Ewen Allotment - Key area # 11 (Lost Cabin Pasture)

(within Joint Use Area)

**Ecological Site** - Basalt Hills "6-10" p.z.

Current total live perennial vegetative cover: 23%

Current plant composition:		Total for grasses or shrubs	Composition Objective
Big galleta	12%		
Bush muhly	2%	15%	1-8%
3-Awn	1%		
Flattop buckwheat	7%		
White ratany	13%	33%	3-15%
Range ratany	13%		

Fort Mac Ewen Allotment - Key area # 12 (Squaw Pocket Pasture)

Ecological Site - Sandy Loam Upland 10-13" p.z.

Current total live perennial vegetative cover: 14%

Current plant composition:		Total for grasses or shrubs	Composition Objective
Big galleta	1%	1%	1-5%
Flattop buckwheat	9%		
Mormon tea	29%	52%	3-15%
Range ratany	14%		

**Fort Mac Ewen Allotment -** Key area # 13 (Valley Pasture)

Ecological Site - Sandy Loam Upland 10-13" p.z.

Current total live perennial vegetative cover: 12%

Current plant compo	osition:	Total for grasses or shrubs	Composition Objective
Big galleta	13%	13%	1-5%
Mormon tea	14%		
Range ratany	13%	27%	2-10%

Fort Mac Ewen Allotment - Key area # 18 (Twin Mills Pasture)

(within Joint Use Area)

**Ecological Site** - Basalt Hills 10-13" p.z.

Current total live perennial vegetative cover: 18%

Current plant composition:		Total for grasses or shrubs	Composition Objective
Muttongrass	1%		2.100
Big galleta	50%	54%	2-10%
3-Awn	3%		
Shrubby buckwheat	5%		
Flattop buckwheat	5%		
Mormon tea	12%	29%	17-35%
Range ratany	4%		
Bladdersage	3%		

**Fort Mac Ewen Allotment -** Key area # 20 (Twin Mills Pasture)

(within Joint Use Area)

**Ecological Site** - Limy Hills 10-13" p.z.

Current total live perennial vegetative cover: 9%

Current plant compo	osition:	Total for grasses or shrubs	Composition Objective
Big galleta	10%	10%	10-15%
Mormon tea	12%	23%	6-15%
Range ratany	11%		

Fort Mac Ewen Allotment - Key area # 21 (Squaw Pocket Pasture)

(within Joint Use Area)

Ecological Site - Sandy Loam Upland 10-13" p.z.

Current total live perennial vegetative cover: 16%

Current plant composition:		Total for grasses or shrubs	Composition Objective
Bush muhly	5%	20%	2-10%
Big galleta	15%		
Mormon tea	11%	18%	2-10%
Wolfberry	7%		

# D. Frequency Data

Frequency data has been collected several times from 1983 through 2009 at all key areas except for Key Area #21. The following is a summary of frequency by species. For more detailed information on frequency see Appendix D.

Cerbat Allotment			Frequency	
Key Area	Species	Up	Down	Static
#1	Black grama		X	
	Mormon tea	X		
	Big galleta	X		
	Bush muhly			X
	Flattop buckwheat	X		
	Range ratany			X
#2	3-Awn		X	
	Squirreltail		X	
	Broom snakeweed		X	
	Desert needlegrass	X		
	Big galleta	X		
	Black grama			X
	Mormon tea			X
	Range ratany			X
#3	Desert needlegrass	X		
	Black grama			X
	Twinberry			X
	3-Awn			X
	Squirreltail		X	

	Broom snakeweed		X	
#17	Big galleta		X	
	Black grama		X	
	Broom snakeweed		X	
	Mormon tea	X		
	Range ratany			X
	Flattop buckwheat			X
	3-Awn			X
	Bush muhly			X
Quail Sp	orings Allotment			
#5	Black grama		X	
	Bush muhly		X	
	Broom snakeweed		X	
	Big galleta	X		
	Mormon tea	X		
#6	Black grama			X
	Mormon tea			X
	Big galleta	X		
	Broom snakeweed		X	
#8 (joint use area)	Bush muhly		X	
	Black grama			X
	Big galleta			X X
	Mormon tea			X
#9	Black grama			X
	Range ratany			X
	Flattop buckwheat			X
	Big galleta		X	
	Broom snakeweed		X	
	Mormon tea	X		
#10	Sideoats grama		X	
	Black grama		X	
	Squirreltail		X	
	Desert needle			X
#14	Sideoats grama		X	
	Muttongrass		X	
	Broom snakeweed		X	
	Squirreltail		X	
	Desert needlegrass	X		
	Black grama			X
	Bush muhly			X
	Desert rock pea			X
	Mormon tea			X
#15	Black grama		X	
	3-Awn		X	
	Broom snakeweed		X	

	Mormon tea	X		
	Fourwing saltbush	X		
Fort Mac	Ewen Allotment			
#11(joint use area)	Mormon tea			X
	Bush muhly			X
	Big galleta			X
#12	Big galleta		X	
	Bush muhly		X	
	Range ratany			X
	Flattop buckwheat			X
	Mormon tea	X		
#13	Big galleta			X
	Bush muhly			X
	Mormon tea	X		
#18 (joint use area)	Big galleta			X
	Mormon tea			X
#20 (joint use area)	Big galleta			X
	Mormon tea			X
#21(joint use area)	Big galleta	X		
	Bush muhly	X		
	Mormon tea		_	X

#### E. Utilization Data

Utilization was collected over a span of 28 years. Data was not collected every year. The following summarizes utilization for each key area. For more detailed information about utilization levels see Appendix E.

#### **Cerbat Allotment**

# • Key area # 1 (House Pasture)

Average utilization for all key species ranged from 12 to 19 percent for the 19 years utilization data was collected.

## • Key area # 2 (Cerbat Pasture)

Average utilization on all key species ranged from 4 to 27 percent for the 12 years utilization data was collected. Utilization levels exceeded 50% in 3 of the 12 years for the key species Mormon tea, and twinberry.

# • Key area # 3 (Cerbat Pasture)

Average utilization ranged from 5 to 26 percent on key species for the 12 years utilization data was collected. Utilization level exceeded 50% in 4 of the 12 years for the key species twinberry, desert needlegrass and needle-and-thread grass.

#### • Key area # 17 (Highway 93 Pasture)

Average utilization levels ranged from 24 to 34 percent for the 20 years utilization data was recorded. The utilization level exceeded 50% in 6 of the 20 years for the key species big galleta and Mormon tea.

#### **Quail Springs Allotment**

#### • Key area # 5 (Black Tank Pasture)

Average utilization levels ranged from 29 to 42 percent for the 18 years utilization data was recorded. The utilization level exceeded 50% in 4 of the 18 years for the key species bush muhly, Mormon tea, and black grama.

#### • Key area # 6 (Sugar Loaf Pasture)

Average utilization levels ranged from 28 to 43 percent for the 20 years utilization data was recorded. The utilization level exceeded 50% in 3 of the 20 years for the key species Mormon tea.

## • Key area # 8 (Sugar Loaf Pasture) – Joint Use Area

Average utilization levels ranged from 16 to 47 percent for the 14 years utilization data was recorded. The utilization level exceeded 50% in 1 of the 14 years for Black grama. Utilization exceeded 40% 5 in 14 years for Mormon tea. Utilization exceeded 35% 6 in 14 years for big galleta.

#### • Key area # 9 (West Big Wash Pasture)

Average utilization levels ranged from 12 to 41 percent for the 19 years utilization data was recorded. The utilization level exceeded 50% in 5 of the 19 years for the key species big galleta, black grama, white-stem paperflower and Mormon tea.

# • Key area # 10 (East Big Wash Pasture)

Average utilization levels ranged from 11 to 31 percent for the 16 years utilization data was recorded. The utilization level exceeded 50% in 3 of the 16 years for the key species desert needlegrass, and sideoats grama.

#### • Key area # 14 (Marble Canyon Pasture)

Average utilization levels ranged from 11 to 16 percent for the 11 years utilization data was recorded. The utilization levels have never exceeded 50% in the 11 years data is available.

## • Key area # 15 (Quail Springs Pasture)

Average utilization levels ranged from 16 to 25 percent for the 19 years utilization data was recorded. The utilization level exceeded 50% in 2 of the 19 years for the key species Mormon tea.

#### Fort Mac Ewen Unit A Allotment

#### • Key area # 11 (Lost Cabin Pasture) – Joint Use Area

Average utilization levels ranged from 11 to 18 percent for the 17 years utilization data was collected. The utilization level exceeded 40% one of the 17 years for the key species Mormon tea. Utilization levels exceeded 35% 2 of 17 years for the key species big galleta.

# • Key area # 12 (Squaw Pocket Pasture)

Average utilization levels ranged from 28 to 40 percent for the 19 years utilization data was collected. The utilization level exceeded 50% 10 of the 19 years for the key species big galleta, Mormon tea and bush muhly.

#### • Key area # 13 (Valley Pasture)

Average utilization levels ranged from 27 to 34 percent for the 15 years utilization data was collected. The utilization level exceeded 50% 4 of the 15 years for the key species big galleta, Mormon tea and bush muhly.

## • Key area # 18 (Twin Mills Pasture) – Joint Use Area

Average utilization levels ranged from 19 to 43 percent for the 18 years utilization data was collected. The utilization level exceeded 35% 9 of the 18 years for the key species big galleta. The utilization level exceeded 40% 6 of the 18 years for the key species Mormon tea. The utilization level exceeded 50% 1 of the 18 years for the key species 3-awn.

#### • Key area # 20 (Twin Mills Pasture) – Joint Use Area

Average utilization levels ranged from 7 to 38 percent for the 15 years utilization data was collected. The utilization level exceeded 50% 4 of the 15 years for the key species bush muhly and winterfat. The utilization level exceeded 40% 5 of the 15 years for the key species Mormon tea. The utilization level exceeded 35% 4 of the 15 years for the key species big galleta.

# • Key area # 21 (Lost Cabin Spring) (Squaw Pocket Pasture) – Joint Use Area

Average utilization on all key species ranged from 17 to 55 % for 7 years utilization data was collected. Utilization levels exceeded 35% in 6 of the 7 years for the key species big galleta and exceeded 40% 1 of the 7 years for Mormon tea.

#### F. Upland Health Information

To determine the functional status of the three rangeland heath attributes (soil/site stability, hydrologic function, and biotic integrity) the ID team reviews the ratings of the 17 indicators on site by site basis and makes the interpretation into a collective rating. Based on the rating, it is determined if more information is needed or the site requires management action (Pellant et al. 2005, pgs. 41, Step 5).

Key Area		Upland Assessment	Key Area Total Perennial Vegetative Cover
Cerbat	#1	None to slight	22%
	#2	None to slight	31%
	#3	None to slight	39%
	#17	None to slight	11%
Quail Spring	#5	None to slight	13%
	#6	None to slight	16%
	#8	None to slight	28%
	#9	None to slight	20%
	#10	None to slight	48%
	#14	None to slight	44%
	#15	None to slight	29%
Fort Mac Ewen	#11	None to slight	23%
Unit A	#12	None to slight	14%
	#13	None to slight	25%
	#18	None to slight	34%

#20	None to slight	9%
#21	None to slight	14%

The results of assessment of the Upland Health Standard indicate all key areas were rated as a none to slight departure from the attributes measured at the key areas such as cover data, and qualitative data assessment of the soil and hydrology such as rills, flow patterns, pedestals, bare ground, gullies, litter, movement, compacted soil, etc (Interpreting Indicators of Rangeland Health, TR1734-6).

# G. Riparian Information

There are no lotic (flowing) riparian wetland areas within the CQFM complex. Marble Canyon was evaluated for its riparian potential in 1999 and no portion of this canyon met BLM's definition of riparian (BLM 1987 and 1988). It was determined to be an ephemeral wash (BLM 1999a).

There were 22 springs inventoried on CQFM (Appendix B) of which 13 are perennial (six are on private land) springs, 8 ephemeral (two are on private land) springs, and 1 spring that is no longer active. Data sheets for 22 springs are on file at the Kingman Field Office. One perennial spring located at the ranch headquarters on private land was not inventoried.

<u>Perennial Springs on Public Land</u>: Perennial springs have potential for riparian vegetation to develop and be maintained. A spring was determined to be perennial if there were indications of the presence of water year round at the surface or subsurface, local knowledge of the spring, and the presence or potential for live riparian vegetation such as sedges, rushes, cattails, cottonwood trees etc.

Barksdale Spring: This is an undeveloped spring located in a steep and narrow slot canyon. There is surface water and well developed riparian vegetation (cattails, sedges, and rushes) associated with this spring. Small game and non-game wildlife use this spring. Livestock are currently not using this spring due to steep topography.

Lucky Boy Spring: This is an undeveloped spring with surface water and well developed riparian habitat (sedges, and rushes). This spring waters wildlife and wild horses. Livestock are currently not using this spring due to steep topography.

#### The Falls Springs:

The upper spring is a developed spring (horizontal well) with a small (15' x 10') area of riparian vegetation development (rushes and bermuda grass). There is surface water.

The lower spring is developed and flows onto mine tailings on a road. No riparian vegetation is present. Livestock, wild horses, and wildlife use these springs.

Copper Age Spring: This is a mine adit that has caved in. Because of unsafe conditions it could not be determined if water was present. If water pools in the adit it would be accessible to birds & small mammals only. There is no riparian development.

- Swicker Spring: This is an undeveloped spring with surface water. Riparian vegetation consists of sedges, baccharis, and rabbits foot grass. Wildlife (especially javelina) heavily use this spring. Wild horse sign was light. No livestock sign was observed at this spring.
- Big Wash Spring: This is a developed spring with surface water and little riparian development (baccharis). The gradient downstream of the source is low. There is abundant livestock sign at the spring. Riparian plants are heavily utilized by livestock.
- James Spring: The spring arises from mine adit that has caved in. Water from the adit is pooled behind a small dam of wooden boards and is collected at the pool. The spring and pool are fenced (approximately 34' X 60') to exclude livestock. This spring has well developed riparian habitat (cattails, salt cedar, and bermuda grass). Water is piped to a trough outside the enclosure for grazing animals. At the trough, water overflows and spills onto the ground and runs for approximately 40 feet below the trough.
- Lost Cabin Spring: This is a developed spring however the development is no longer usable. It appears that the spring was originally dug out to form a well from which water was piped for livestock use. The dug out area has caved in with no evidence of surface or subsurface water. There is no riparian vegetation present.

### <u>Perennial Springs on Private Land:</u>

Most springs on private lands were inventoried however BLM has no management jurisdiction on private lands.

- Horse Spring: This is an undeveloped contact spring, where a perched water table overlies bedrock. There is a small puddle of surface water. Riparian vegetation consists of sedges, baccharis, bermuda grass, and salt cedar.
- Marble Wash Spring: This is a developed contact spring. Water is piped down slope to a trough and tank. The pipeline system may not be functioning at this time. Surface water flows for approximately fifty feet. Riparian vegetation is mostly baccharis with small amounts of sedges and bermuda grass. Livestock sign is prevalent at the spring site.
- Putman Spring: This is a developed contact spring. Water is piped down slope to the Quail Springs Ranch headquarters. There is no surface water at this spring as all water is conveyed in a water line. The only vegetation is baccharis. There is a small leak in the line near the source. Livestock and wildlife utilize the leaking water.
- Quail Spring: This spring was not inventoried as it is located at the Ranch Headquarters.
- Rocky Road Spring This is a undeveloped contact spring with a pool of water measuring approximately 1' X 1'. Riparian vegetation consists of baccharis. No livestock use at this spring.
- Burns Spring This is an undeveloped spring with surface water. Riparian vegetation

consists of Mulberry, coyote willow, net-leaf hackberry, Gooding's willow, and Arizona grape. Livestock sign is prevalent near the source.

# **Ephemeral Springs**:

Ephemeral springs show little evidence of surface or subsurface water and water is not present during most of the year. Vegetation at ephemeral springs consists primarily of upland species.

### **VI. Conclusions**

A. Standard 1: Upland Health

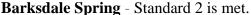
Standard 1 was met at all Key Areas.

Rationale: Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and landform (ecological site). Assessment results from all key areas indicate a none to slight departure from the attributes measured. The ID team evaluated the ratings of the 17 indicators on a site by site basis and made a collective rating of none to slight which is the least departure from normal (see *Section VII*, *F*, *Data Summary*).

### B. Standard 2: Riparian-Wetland Sites

Conclusions for perennial springs are listed below:

Assessing the functionality of springs involves collecting information on the hydrological, vegetative and erosion/deposition characteristics of the spring area found in the Lentic Standard Checklist (BLM 1999, Revised 2003). A spring is determined to be in proper functioning condition if the indicators of riparian functionality on the checklist are present. (see Appendix H for a blank Lentic Standard Checklist).





Barksdale Spring – 12-4-2009

**Rationale:** Based on the indicators of riparian functionality this spring is a properly functioning undeveloped spring. There is no evidence of livestock or wild horse use at this spring. Access is difficult for these species.

Lucky Boy Spring: Standard 2 is met.



Lucky Boy Spring – 12-2-2009

**Rationale:** This is a properly functioning undeveloped spring that provides water to wildlife and wild horses. The riparian vegetation at this spring consists of sedges and rushes. Livestock are not using the spring because it is located in steep terrain.

# **The Falls Springs:**

**Upper Springs**: Standard 2 is met.



**Upper Spring – 11-25-2009** 

**Rationale**: The upper spring is developed (horizontal well) and properly functioning. There is a small pool of water fed by a pipe surrounded by riparian vegetation consisting of rushes and baccharis. Bermuda grass is also present.

Lower Spring: Standard 2 is not met.



Lower Spring – 11-25-2009

Rationale: The lowers spring was historically developed but the development is currently not working. The spring flows directly from a collapsed mine adit across mine tailings and then along a road. Recreational activity on the road and mining appears to be preventing riparian development along the sixty feet of wetted area which is on the road surface. The porous nature of the mine tailings provides for rapid permeability of water which results in a poor growth medium and may prevent riparian establishment. Livestock grazing is not affecting the functionality of this spring.

**James Spring:** Standard 2 is met.

**Rationale:** There is no excessive erosion or deposition occurring at the site and riparian vegetation, which consist of cattails and other riparian species, is vigorous and well established. The source is fenced from livestock.

It has been determined that there would be no potential for riparian development at this spring if the dam that causes water to pool were removed. This spring is located on a steep hillside. If water were not pooled it would flow downhill and quickly go subsurface.

Copper Age Spring: Standard 2 is not applicable

**Rationale**: There is no riparian development potential. This spring is located within a mine adit that has caved in. The water if present is in the mine and accessible only to small animals.

**Swicker Spring:** Standard 2 is not met.

**Rationale**: This spring was determined to be non-functional. This spring has the potential for riparian development but is being affected by trampling due to heavy javelina use. Wild horse sign is light. Livestock are not using this spring.

**Big Wash Spring:** Standard 2 is not met.

**Rationale:** This spring was determined to be non-functional. Surface water runs approximately 100 feet downstream from the source. The wetted surface is heavily trampled by livestock which is limiting riparian development. This is a developed spring and is part of the Big Wash pipeline system.

**Lost Cabin Spring**: Standard 2 is not-applicable.

**Rationale:** There is no potential for riparian development at this spring. The water table is too low for the area to support riparian vegetation.

Ephemeral Springs: There are 6 ephemeral springs that were inventoried on public land (Appendix B).

Standard 2 – Not applicable

**Rationale**: The ephemeral springs on CQFM have low potential for riparian habitat development due to low water production and in most times of the year no evidence of water on the surface. Water is also not present in the subsurface during most of the year. Because of the dry nature of these sites, vegetation consists primarily of upland species.

#### C. Standard 3: Desired Resource Condition

- In order to Meet Standard 3 all of the following must be obtained:
  - a.) Utilization levels of each key species must not exceed the levels set in the Cerbat-Black Grazing EIS (BLM 1978), or when within the Joint Use Area, the levels set in the Black Mountain Ecosystem Management Plan (BLM 1996), over the evaluation period.
  - b.) Objectives for site-specific plant composition and cover are obtained.
  - c.) The frequency data indicates:
    - -Trend is static or upward.

or

- -Trend is downward, however percent plant composition exceeds objectives and both utilization and cover objectives are being met.\*
- If not meeting Standard 3, but Making Significant Progress Towards Meeting the Standard the following must be obtained:
  - a.) Trend is upward on those sites not meeting one of the following objectives: utilization, plant composition, or cover.

<sup>\*</sup>e.g. If a site *exceeds* plant composition objectives for palatable grasses and shrubs, utilization is within set levels, cover is within guidelines, and trend is down, the site was determined to be meeting the standard. Due to past favorable environmental conditions, the plant community may be above site potential.

#### **Cerbat Allotment**

# Key Area 1 - Standard 3 is met.

**Rationale**: Over the evaluation period, the average utilization on key species did not exceed 50% at this study location. Utilization ranged from 12 to 19 percent for the 18 years utilization data was collected.

The objective for cover is 20-30% and the data showed that existing cover is 22%. The objective for composition of grasses is 26-47% and the data showed that existing composition was 53%. The objective for composition of shrubs is 3-12% and the data showed that existing composition is 32%.

Monitoring data collected at this location indicates the frequency of Black grama has decreased while the frequency of Mormon tea, flattop buckwheat, and big galleta have increased over the evaluation period. Range ratany and bush mully have remained static.

Based on rainfall data (Appendix C) and actual use data (see *Section II D. Grazing Management* above) the decrease in Black grama may indicate a cause and effect relationship to drought and repetitive warm season grazing.

From 1992 through 2008 below normal precipitation during the warm season occurred in ten out of seventeen years. Below average precipitation occurred several years in a row compounding the effect of drought on these warm season species. For example, warm season rainfall in the years 1993-1996 and 2001-2004, and 2007 and 2008 (Appendix C) were well below average. Drought also occurred in the 1980s but the frequency of drought was less and did not occur over a period of multiple years in a row (Appendix C). Average warm season rainfall in 1982 and above average rainfall in 1983 may account for the higher warm season plant species frequency recorded in 1984.

This pasture was grazed in the spring and summer months most years. Continuous grazing wherein livestock are placed on the range and allowed to remain yearlong or throughout the grazing season has been shown to result in undesirable successional changes in range forage (Stoddart et. al. 1975). By not allowing key species to grow unhindered during the period most favorable for growth, they produce less seed and the establishment of new plants may be effected. Species that reproduce vegetatively are also expected to have fewer news plants established. Even though utilization is low at this Key Area, Black grama reproduces by stolons and repeated grazing during the reproductive stage does not allow the plant to establish new plants. The parent plant has a life span of approximately five years (Canfield 1957).

An increase in the frequency of Mormon tea and Flattop buckwheat may be a result of lack of grazing during the fall and winter months which is the time of year that livestock switch from grasses to shrubs. Big galleta increase may also be a result of fall/winter rest. Although big galleta is known as a warm season species, it is able to grow whenever it is warm enough and available soil moisture is present. Therefore, this species can actively grow when livestock are using shrubs absent.

Although the trend for some species is down, the composition of all key species including Black grama is well above the ecological site description for Key Area 1.

**Key Area 2** - Standard 3 is met.



Key Area 2 - 12-24-2009

**Rationale**: Over the evaluation period, the average utilization on key species did not exceed 50% at this study location. Average utilization on all key species ranged from 4 to 27% for the 12 years data was collected.

The objective for cover is 25-35% and the data showed that existing cover is 32%. The objective for composition of grasses is 17-33% and the data showed that existing composition is 22%. The objective for composition of shrubs is 31-45% and the data showed that existing composition is 37%.

The frequency of 3-awn, squirreltail, and broom snakeweed has decreased, while desert needlegrass and big galleta have shown an increase over the same period. Black grama, Mormon tea, and range ratany have not significantly changed throughout the evaluation period.

Overall trend is static to upward for most key forage species. 3-awn and broom snakeweed are not desirable forage species and therefore the reduction of these two species may indicate an improvement in the overall health of this site. Squirreltail is known as increaser species on degraded rangelands therefore the reduction of this species on the site may indicate an overall improvement in rangeland health.

### **Key Area 3** - Standard 3 is not met but making significant progress

**Rationale**: Over the evaluation period, the average utilization on key species did not exceed 50% at this study location. Average utilization ranged from 21 to 44% on key species for the 12 years utilization was data collected.

The objective for cover is 25-35% and the data showed that existing cover was 39%. The objective for composition of grasses is 16-33% and the data showed that existing composition is 13%. The objective for composition of shrubs was 31-45% and the data showed that existing composition was 53%.

The frequency of Desert needlegrass has shown an increase from the initial levels first recorded at this site. Black grama, twinberry, and 3-awn have remained static throughout the evaluation period. Species that have deceased are squirreltail and broom snakeweed.

Overall trend is static to upward for most key forage species. Broom snakeweed is not a desirable forage species and therefore the reduction of this species may indicate an improvement in the health of this site. Squirreltail is known as increaser species on degraded rangelands therefore the reduction of this species on the site appears to indicate an improvement in rangeland health.

It has been determined that Standard 3 is not met but is making significant progress as the composition of some key grass species are below the ESD levels, however desert needle grass has increased over the evaluation period.

#### **Key Area 17** - Standard 3 is met.

**Rationale**: Over the evaluation period, average utilization on the key species did not exceed 50% at this study location. Average utilization levels ranged from 24 to 34% for the 20 years utilization data was recorded.

The objective for cover is 10-20% and the data showed that existing cover is 11%. The objective for composition of grasses is 22-38% and the data showed that existing composition is 47%. The objective for composition of shrubs is 11-23% and the data showed that existing composition is 26%.

Data indicates the frequency of big galleta, black grama and broom snakeweed have decreased. Mormon tea has shown a steady increase in frequency from initial levels. The frequency of range ratany, flattop buckwheat, 3-awn, and bush muhly has remained unchanged. Based on rainfall data (Appendix C) the decrease in black grama and big galleta indicates a cause and effect relationship to drought (Appendix C), as well as repetitive warm season grazing in most years (see *Section II, D, Grazing Management*). See *Rationale* section of Key Area 1 above for a discussion of the effects of drought and continuous grazing. The increase in the frequency of Mormon tea may be a result of lack of grazing during the fall and winter months.

Although the trend for some species is down, the overall trend is static. The composition of big galleta and Mormon tea are well above the ecological site description levels. Black grama and bush muhly fall within the levels established for this ecological site description. Broom snakeweed is not a desirable forage species and therefore the reduction of this species may indicate an improvement in the health of this site.

# **Quail Spring Allotment**

### **Key Area 5** - Standard 3 is not being met.

**Rationale:** Over the evaluation period average utilization on the key species did not exceed 50% at this study location. Average utilization levels ranged from 29 to 42% for the 18 years utilization data was recorded.

The objective for cover is 10-20% and the data showed that existing cover was 13%. The objective for composition of grasses was 22-38% and the data showed that existing composition was 43%. The objective for composition of shrubs was 1-12% and the data

showed that existing composition was 17%.

The frequency of black grama, bush muhly, and broom snakeweed has decreased, while big galleta and Mormon tea have increased over the same period. Based on rainfall data (Appendix C) the decrease in black grama and bush muhly indicates a cause and effect relationship to drought (Appendix C), as well as repetitive warm season grazing in most years (see Section II, D, Grazing Management). See Rationale section of Key Area 1 above for a discussion of the effects of drought and continuous grazing.

Based on frequency data overall trend is down for Key Area 5. The composition of Big galleta and Mormon tea are well above the ecological site guide levels, but black grama and bush mully fall below the levels established by the ecological site description.

\*Broom snakeweed is not a desirable forage species and therefore the reduction of this species may indicate an improvement in the health of this site.

It has been determined that Standard 3 is not met as overall trend is down, and the composition of some key grass species are below the ESD levels.

# **Key Area 6** - Standard 3 is met.

**Rationale:** Over the evaluation period average utilization on the key species did not exceed 50% at this study location. Average utilization levels ranged from 28 to 43% for the 20 years utilization data was recorded.

The objective for cover is 10-20% and the data showed that existing cover was 15%. The objective for composition of grasses was 21-35% and the data showed that existing composition was 61%. The objective for composition of shrubs was 0-3% and the data showed that existing composition was 4%.

According to data collected at this site, the frequency of black grama and Mormon tea changed only slightly from initial estimates. The frequency of big galleta increased and the frequency of broom snakeweed decreased at this site during the same period.

Based on frequency data overall trend is static for Key Area 6. The composition of big galleta and Mormon tea are above the ecological site guide levels. Black grama is within the levels established by the ecological site description.

**Key Area 8** - Standard 3 is met (Joint Use Area)



Key Area #8 - 1-8-2009

**Rationale:** Over the evaluation period average utilization on the key species big galleta did not exceed 35%, and use on key species Mormon tea did not exceed 40%, and use did not exceed 50% for black grama at this study location. Average utilization levels ranged from 16 to 47% for the 14 years utilization data was recorded.

The objective for cover is 10-20% and the data showed that existing cover was 27%. The objective for composition of grasses is 9-24% and the data showed that existing composition was 57%. The objective for composition of shrubs is 17-43% and the data showed that existing composition was 16%.

Frequency data has only been collected at this location twice since this study was established in 1981. The frequency data indicates that the frequency of bush muhly decreased and black grama, big galleta and Mormon tea all remained unchanged at this site during the same period.

Based on frequency data overall trend is static for Key Area 8. The composition of big galleta is above the ecological site description. Black grama and Mormon tea are within the levels.

# **Key Area 9** - Standard 3 is met.

**Rationale:** Over the evaluation period average utilization on the key species did not exceed 50% at this study location. Average utilization levels ranged from 12 to 41% for the 19 years utilization data was recorded.

The objective for cover is 20-30% and the data showed that existing cover was 20%. The objective for composition of grasses is 20-35% and the data showed that existing composition was 41%. The objective for composition of shrubs is 3-12%% and the data showed that existing composition was 29%.

Monitoring data from this Key Area suggests frequency levels for black grama, range ratany

and flattop buckwheat remain close to initial levels first recorded in 1984. The frequency of big galleta and broom snakeweed have decreased while Mormon tea increased at this location over the same time frame.

Based on frequency data overall trend for most key species is static for Key Area 9. The composition of Mormon tea and big galleta are above the ecological site description (ESD) however big galleta shows a significant drop in frequency. Black grama is below the ESD level. For further analysis on Mormon tea and black grama see *Rationale* section of Key Area 1 above for a discussion of drought and subsequent affects on warm season plant species.

### **Key area 10** (East Big Wash Pasture) Standard 3 is not met.

Over the evaluation period average utilization on the key species did not exceed 50% at this study location. Average utilization levels ranged from 11 to 31% for the 16 years utilization data was recorded.

The objective for cover is 25-35% and the data showed that existing cover was 49%. The objective for composition of grasses is 17-38% and the data showed that existing composition was 21%. The objective for composition of shrubs is 30-45% and the data showed that existing composition was 20%.

Data from this location indicates the frequency of sideoats grama has fluctuated over time however current levels are down for sideoats grama, black grama, and squirreltail. The frequency of desert needlegrass also fluctuated over time but the current level is higher than the initial level for this species. The only other plant on this site showing a decrease in frequency is broom snakeweed. See *Rationale* section of Key Area 1 above for a discussion of drought and subsequent affects on warm season plant species.

Based on frequency data, overall trend is down. Trend for most key species is down with the exception of desert needlegrass. The composition of black grama, desert needlegrass, and squirreltail, are below ecological site description (ESD) levels. Sideoats grama is above the ESD. However black grama, sideoats, and squirreltail show a significant drop in frequency. These species may have experienced a drop in frequency due to drought and yearlong use from domestic horses. See *Rationale* section of Key Area 1 above for a discussion of the effects of drought and continuous grazing.

It has been determined that Standard 3 is not met as overall trend is down and the composition of most key grass species are below the ESD levels. The composition of shrubs is below ESD levels.

### **Key area 14** (Marble Canyon Pasture) Standard 3 is not met.

Over the evaluation period average utilization on the key species did not exceed 50% at this study location. Average utilization levels ranged from 11 to 16% and never exceeded 50% on the key species for the 11 years utilization data was recorded.

The objective for cover is 20-40% and the data showed that existing cover was 44%. The objective for composition of grasses is 16-33% and the data showed that existing composition was 20%. The objective for composition of shrubs is 36-60% and the data showed that existing composition was 15%.

Data from this location indicates the frequency of sideoats grama, muttongrass, broom snakeweed, and Squirreltail have decreased and desert needlegrass has increased. Black grama, bush muhly, desert rock pea, and Mormon tea are static.

Based on frequency data, overall trend for this site is down. Trend for most key species is down or static with the exception of Desert needlegrass which is up. The composition of black grama, bush muhly, and sideoats grama, are within the ecological site description (ESD) levels. Desert needlegrass is below the ESD. However sideoats and squirreltail show significant drop in frequency. These species may have experienced a drop in frequency due to drought. See *Rationale* section of Key Area 1 for discussion of drought effects.

It has been determined that Standard 3 is not met as the trend is down or static for key grass species and up for one key grass species. The composition of shrubs is below ESD levels.

### **Key area 15** (Quail Springs Pasture) Standard 3 is met.

Average utilization on the key species did not exceed 50% at this study location. Average utilization levels ranged from 16 to 25% for the 19 years utilization data was recorded.

The objective for cover is 20-40% and the data showed that existing cover was 29%. The objective for composition of grasses is 20-35% and the data showed that existing composition was 40%. The objective for composition of shrubs is 2-9%% and the data showed that existing composition was 36%.

The data set suggests, the frequency of black grama, 3-Awn and broom snakeweed decreased from initial levels recorded at this site. The species Mormon tea and fourwing saltbush has shows an increased in frequency, while all other key species indicates frequency is static over the same period.

Frequency data suggests overall trend is static for most key species with the exception of Black grama which is down. However, the composition of black grama, big galleta, Mormon tea and range ratany are above ecological site description (ESD) levels.

#### Fort Mac Ewen Unit A Allotment

### **Key area** # 11 (Lost Cabin Pasture) - Standard 3 is met. (Joint Use Area)

Over the evaluation period, at this study location, average utilization on the key species did not exceed the levels set in the Black Mountain Ecosystem Management Plan (BLM 1996). Average utilization levels ranged from 11 to 18 percent for the 17 years utilization data was collected.

The objective for cover is 20-30% and the data showed that existing cover was 23%. The objective for composition of grasses is 1-8% and the data showed that existing composition was 15%. The objective for composition of shrubs is 3-15% and the data showed that existing composition was 33%.

The data set suggests, the frequency of all key species is static at this site. Therefore overall trend is static for most key species with the exception of Range ratany which is down. The composition of range ratany and big galleta are above ecological site description (ESD) levels. It is also important to point out this Key area was effected by wildfire which occurred

in the 1980s or early 1990.

Key area # 12 (Squaw Pocket Pasture) - Standard 3 is not met.

Over the evaluation period, at this study location, average utilization on the key species did not exceed the 50% levels set in Cerbat Black Grazing Environmental Impact Statement (1978). Average utilization levels ranged from 28 to 40 percent for the 19 years utilization data was collected.

The objective for cover is 10-20% and the data showed that existing cover was 14%. The objective for composition of grasses is 1-5% and the data showed that existing composition was 1%. The objective for composition of shrubs is 3-15% and the data showed that existing composition was 52%.

Data from this key area indicates the frequency of big galleta and bush muhly has decreased, while the frequency of range ratany and flattop buckwheat show little change over time. Mormon tea has shown an increased in frequency over this same time-frame.

The overall trend is down for key grass species and static for flattop buckwheat and up for Mormon tea. The composition of big galleta is within but at the lower end of the ecological site description (ESD) levels. Mormon tea and flat-top buckwheat are above ESD levels. It is also important to point out this Key area was effected by wildfire which occurred in the 1980s or early 1990.

It has been determined that Standard 3 is not met. Trend is down for key grass species.

Key area # 13 (Valley Pasture) - Standard 3 is met.

Over the evaluation period, at this study location, average utilization on the key species did not exceed the 50% levels set in Cerbat Black Grazing Environmental Impact Statement (1978). Average utilization levels ranged from 13 to 34 percent for the 15 years utilization data was collected.

The objective for cover is 10-20% and the data showed that existing cover was 12%. The objective for composition of grasses is 1-5% and the data showed that existing composition was 13%. The objective for composition of shrubs is 2-10% and the data showed that existing composition was 27%.

According to the data from this key area, the frequency of big galleta and bush mully has fluctuated up and down however they are static at this time. The frequency of Mormon tea has shown an increase.

Overall trend for most key species is static with the exception of Mormon tea which is up. The composition of all key species exceeds the ecological site description ESD levels. It is also important to point out this Key area was effected by wildfire which occurred in the 1980s or early 1990and may account for the decrease in black brush at this site.

**Key area** # **18** (Twin Mills Pasture) - Standard 3 is not met. (Joint Use Area)



Key Area #18

Average utilization levels exceeded 35% for the key species big galleta and 40% for Mormon tea.

The objective for cover is 10-20% and the data showed that existing cover was 18%. The objective for composition of grasses is 2-10% and the data showed that existing composition was 54%. The objective for composition of shrubs is 17-35% and the data showed that existing composition was 29%. According to the data set from this site, the frequency of big galleta and Mormon tea is static. Therefore, the overall trend is static.

The composition of big galleta and Mormon tea exceed the ecological site description ESD levels. This key area was involved in two large fires which occurred in July, 2005 (Twin Mills Fire, 11,927 acres) and in June, 2006 (Union Fire, 8,380 acres). These wildfires occurred in this Key area just prior to data collection in 2006. This key area still shows the effects of the burn. The burns have reduced cover and key forage plants may still be recovering as evidenced by the static trend (see Appendix D, cover and frequency data).

It has been determined that Standard 3 is not met. Trend is static and utilization levels are exceeded.

**Key area # 20** (Twin Mills Pasture) - Standard 3 is not met. (Joint Use Area)



Key Area #20

Over the evaluation period, at this study location, average utilization on the key species Big galleta, Mormon tea, bush muhly, winter fat, and Indian ricegrass did not exceed the levels set in the Black Mountain Ecosystem Management Plan (BLM 1996). Average utilization levels ranged from 7 to 38 percent for the 15 years utilization data was collected.

The objective for cover is 15-20% and the data showed that existing cover at 9% is below the objective. The objective for composition of grasses is 10-15% and the data showed that existing composition is at 10%. The objective for composition of shrubs is 6-15% and the data showed that existing composition was 23%.

According to the data set from this site, the frequency of all key forage species is static. Therefore, the overall trend is static.

The composition of big galleta is within but at the bottom edge of the range of the ecological site description (ESD) levels. Mormon tea exceeds the ESD levels. This key area was involved in two large wildfires in 2005 and 2006. These wildfires occurred in this Key area just prior to data collection in 2006, and this key area still shows the effects of these burns. The burns have reduced cover and key forage plants may still be recovering as evidenced by the static trend (see Appendix D, cover and frequency data). Cover which is at 9% is well below the lower end of the cover objective (15-20%). Mormon tea frequency remained static. Mormon tea is fire tolerant and is one of the first species to recover following fire.

It has been determined that Standard 3 is not met. Trend is static and cover is well below the objective.

**Key area # 21** (aka: Lost Cabin Spring) (Squaw Pocket Pasture) - Standard 3 is not meeting but making significant progress. (Joint Use Area)

Over the evaluation period, at this study location, average utilization on Mormon tea did not exceed the 40% level set in the Black Mountain Ecosystem Management Plan (BLM 1996). However average utilization for big galleta exceeded the level set at 35% in BLM 1996. Average utilization levels ranged from 17 to 55% for the 7 years utilization data was collected.

The objective for cover is 10-20% and the data showed that existing cover was 16%. The objective for composition of grasses is 2-10% and the data showed that existing composition was 20%. The objective for composition of shrubs is 2-10% and the data showed that existing composition was 18%.

The frequency of big galleta and bush mully is up and for Mormon tea static. The composition of big galleta and Mormon tea exceeds the ESD levels. Bush mully is within the ESD levels. Therefore, the overall trend is upward.

It has been determined that Standard 3 is not met, but making significant progress. Utilization exceeded the levels set for big galleta.

### **VII. Technical Recommendations**

- 1. The permittee needs to provide periodic rest during the growing seasons for cool and warm season plants in these allotments. Although Standard 3 is being met at some of the Key Areas on the allotments, frequency data indicates that for warm season grass species trend is down or static at many of the keys areas across all three allotments. All three of these allotments are categorized as (I) or Improve\* category allotments. The I. D. team has drafted several grazing management alternatives for these allotments, which provides rest during both of the growing seasons (see Appendix F for grazing management alternatives). These grazing management alternatives may be modified or others added during the development of the environmental assessment.
  - \* Allotments in the improve (I) category have the greatest potential for improving existing resource conditions and show the highest return on range improvement monies invested. Allotments in this category will have first priority for range improvements, monitoring and Allotment Management Plans (AMPs) (BLM 1982).
- 2. In order to implement grazing management Alternatives 1 and 2 (Appendix F) the movement of livestock needs to be better controlled. This would be accomplished through the repair of several pasture fences. Fix fencing and repair or replace gates along the boundary between Fort Mac Ewen units A and B in order to keep cattle from Unit A off the ephemeral rangeland in Unit B. The fences which need to be repaired are the west boundary fence of the Lost Cabin Pasture, the west boundary of the Squaw Pocket Pasture and the west and south boundary of the Twin Mills Pasture Cattle are currently using water in Fort MacEwen B at Calles Spring, Portland mine, and drifting all the way to Lake Mohave onto National Park Service land. Non-operational range improvements such as pasture fences that are impossible to maintain may be removed. Specific range improvements will be identified during the development of the environmental assessment.

- 3. If the repair of fencing and gates as described in Number 2 above cannot be accomplished within the next grazing year Squaw Pocket, Lost Cabin and Twin Mills Pastures would be closed to livestock grazing until fence repairs are completed (see Appendix F, Alternative 3).
- 4. Rest the Twin Mills pasture from livestock grazing as stated in Alternative 1 until the range recovers from the 2005 and 2006 wildfires. Recovery is defined as Key Area 20 reaching the pre-burn live vegetation perennial cover objective of 15-20%.
- 5. Evaluate the stocking rate over the next three years using required actual use data, and collect utilization data by pasture every year. Actual Use will be provided by pasture, service area, number of animals, class of livestock and time period grazed.
- 6. To make progress towards meeting Standard 2 at Big Wash Spring, repair or replace the existing fence. The wire fence would be approximately 100 feet long by 50 feet wide built to the following specifications: The fence would be built to BLM fencing standards (BLM Fencing Manual H-1741-1) which would exclude livestock from the spring source and riparian area but allow for big game access. The fence would be 42 inches high with wires from the ground up: 16" smooth, 6" barbed, 8" barbed, 12" barbed. Green metal T-posts would be installed every 16 feet with two wire stays between each post.
- 7. Swicker Spring: Evaluate management options including fencing or a change in the season of use to achieve Proper Functioning Condition of the riparian area.
- 8. Construct three exclosures 10-20 acres in size to exclude livestock grazing. These exclosures would be constructed near Key Area 5 in the Black Tank Pasture; near Key Area 12 in the Squaw Pocket Pasture; and near Key Area 18 in the Twin Mills Pasture. These exclosures will be used as control areas to compare grazed and un-grazed areas within these pastures.
- 9. In order to keep livestock from grazing within the Sugar Loaf Seeding Exclosure (R.I. #035058), the team recommends moving the fence along the south boundary of the exclosure to the north side of an existing road through the exclosure. There are two gates at each end of the road through this exclosure which are left open by the general public. Moving the fence to the north side of the road would remove the road from the exclosure and any need for gates.
- 10. Areas within the CQFM that fall within the "joint use area" will have utilization limits as found in the Black Mountain Ecosystem Management Plan (BLM 1996), and presented in *Section III*, *D*, *Management Goals and Objectives* of this document. These limits will become a part of the terms and conditions of the grazing permit.
- 11. Allocate permitted AUMs by base waters in each allotment.
- 12. The permittee has applied for a change in kind of livestock to add horses to the term grazing permit for the Quail Springs allotment.

### **VIII. Consultation**

- December 2, 2008 The project coordination meeting announcing the start of work on the CQFM allotments evaluation.
- December 16, 2008 Sent out the Consultation, Cooperation and Coordination (CCC) letters to interested parties announcing the start of work on the CQFM allotments evaluation.
- December 17, 2008 CQFM field trip and monitoring with Arizona Game Fish Department (AGFD) Sue Baughman Range Resource Team member (RRT), Mr. Hamilton grazing permittee and BLM.
- December 18, 2008 Monitoring work with AGFD.
- December 22, 2008 Monitoring work with AGFD and permittee.
- December 23, 2008 Monitoring work with AGFD.
- January 1, 2009 Meeting with permittee talk to about livestock management on CQFM allotments.
- February 24, 2009 Field trip with AGFD, Sue Baughman (Range Resource Team member), grazing permittee and BLM
- September 20, 2009 Field trip on with AGFD and permittee
- October 1, 2009 Meeting with permittee talk to about CQFM evaluation.
- December 17, 2009 **CCC** letters sent to interested parties telling of the ongoing work on the CQFM allotment evaluation.
- December 28, 2009 Comments letter received from Greta Anderson Western Watershed Project on the **CCC** letters.
- December 17, 2009 Field trip on with AGFD, Permittee and BLM.
- July, 2009 Telephone call: notification of the proposed grazing permit renewal on CQFM to Brian Wooldridge, Fish and Wildlife Service
- March 9, 2010 Meeting with Elno Roundy, Bob Duey (MLA) and Permittee to talk about CQFM allotment evaluation.

#### 7.2 Public Involvement

Letters received from interested parties after they review the Draft Evaluation for the Cerbat & Quail Springs Allotment will be evaluated by an Interdisciplinary Team.

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